NON-CONSTANT REDUCED-COMPLEXITY MULTIPLICATION IN SIGNAL PROCESSING TRANSFORMS

Abstract:

A machine or method used in signal processing transforms involving computing one or more sums each of one or more products. A multiplier has one or both of its two inputs restricted to limited sets of numbers having given finite-precision numeric formats. The multiplier is not a constant multiplier capable only of computing the product of any first number and a constant. The multiplier is not a general multiplier capable of computing the product of any pair of numbers. The multiplier has lower complexity than a general multiplier, but more flexibility than a constant multiplier. The invention can be used to reduce the overall computational complexity of signal processing transforms. The invention can be used when transform weights are fixed and known. The invention can be used when transform inputs, though random, come from small, known sets, as is the case in digital communications.

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